

Idaho Disease

BULLETIN

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Smallpox in Idaho? What You Should Know

Although the threat of future smallpox is difficult to predict, it is important that medical and public health workers update themselves about this disease. We have identified some important issues for physicians based on training held at the Centers for Disease Control and Prevention (CDC) in Atlanta, December 17-19. In the training, CDC presented their interim smallpox response plan. Some highlights of the plan are outlined below. Several elements of the plan are controversial, and active debates surrounding the availability and delivery of vaccine are ongoing.

Critical Clinical Features of Smallpox

The most frequent mode of transmission is person-to-person spread via direct deposit of infective droplets from close, face-to-face contact with an infectious individual.

Indirect spread via fine-particle aerosols or fomites containing the virus has been reported but is less common. To be safe, airborne precautions are required in the hospital setting, including negative pressure isolation rooms.

In most cases, symptoms begin 12-14 days (range 7-17) after exposure of a susceptible person to the virus. A 2-3 day prodrome of high fever, malaise, and prostration, with severe headache and backache is followed

by a maculopapular rash (eruptive stage) progressing to papules (1 - 2 days after appearance of rash), vesicles (4 - 5th day), pustules (by 7th day), and finally scab lesions (14th day). The rash generally appears first on the oral mucosa, face, and forearms, then spreads to the trunk and legs. Lesions are also seen on the palms of the hands and soles of the feet. The skin lesions of smallpox are deeply embedded in the dermis and feel like firm round objects embedded in the skin. As the skin lesions heal and the scabs separate, pitted scarring gradually develops.

Smallpox patients are most infectious during the first week of the rash when the oral mucosa lesions ulcerate and release large amounts of virus into the saliva. Patients are less infectious once the lesions have scabbed over and no longer infectious once all the scabs have separated (usually 3 - 4 weeks after the onset of the rash).

The overall mortality rate associated with smallpox was approximately 30%.

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Smallpox Vaccine

Smallpox vaccine is a highly effective immunizing agent. It is a live-virus vaccine composed of vaccinia virus. Smallpox vaccine production ceased in the early 1980's, and current supplies of smallpox vaccine are limited (15.4 million doses in the U.S. as of 12/27/2001). It is expected that new cell-culture grown smallpox vaccine will become available in the next year and substantially increase availability.

Post-vaccination adverse events can occur. These adverse events and their rates (per million primary vaccinations) as determined in a 1968 10-state survey include:

- Inadvertent inoculation (529.2)
- Generalized vaccinia (241.5)
- Eczema vaccinatum (38.5)
- Progressive vaccinia (1.5)
- Post-vaccinal encephalitis (12.3)
- Death (1.0 -- usually a result of progressive vaccinia, post-vaccinal encephalitis, or severe eczema vaccinatum)



Child with progressive vaccinia at inoculation site

Several groups have been identified as having a higher risk for developing vaccination complications: persons with eczema (including a history of eczema) or other forms of chronic dermatitis, persons with altered immune states, pregnant women, and children under 1 year of age.

Those receiving primary vaccination also have a greater risk of vaccination complications than those receiving second doses. In the case of a known exposure to smallpox, contraindications are not absolute, and vaccination should be strongly considered.

Priority Activities for Smallpox Outbreak Containment

According to CDC, any vaccination strategy for containing a smallpox outbreak should utilize the ring vaccination concept. This includes:

- Isolating confirmed and suspected smallpox cases,
- Tracing, vaccination, and close surveillance of contacts of cases, and
- Vaccination of household members of the contacts.

Vaccinating and monitoring a "ring" of people around each case and contact will help to form a buffer of immune individuals and prevent spread of disease. According to CDC, this strategy would be more desirable than an indiscriminate mass vaccination campaign for the following reasons:

1. Focused contact tracing and vaccination combined with extensive surveillance and isolation of cases was successful in stopping outbreaks of smallpox in the past.
2. Adverse events would probably be higher in an indiscriminate vaccination campaign due to vaccination of persons with unrecognized contraindications, such as undiagnosed HIV infection.
3. Current supplies of Vaccinia Immune Globulin (VIG) would not be sufficient to treat the number of expected adverse events that would occur with a large, indiscriminate vaccination campaign.
4. Current supplies of smallpox vaccine would be exhausted quickly if an indiscriminate campaign were utilized.
5. Mass vaccination of a large population would require a very large number of health-care and public health workers to vaccinate and deal with the adverse events.

6. Mass vaccination may lead to improper reliance on this strategy to control the outbreak rather than essential outbreak control measures.

Criteria for Release of Smallpox Vaccine



The Director for the Centers for Disease Control and Prevention (CDC) will authorize release of smallpox vaccine according to guidelines set in their smallpox plan.

Notification of Suspected Smallpox Cases

Health care workers should notify the Office of Epidemiology immediately for any of the following:

- A suspected case of smallpox
- An outbreak of illness that is clinically compatible with smallpox
- A request to test an environmental sample for smallpox virus

Future issues of the Idaho Disease Bulletin will outline preparedness planning in Idaho. For more information on smallpox, visit the Centers for Disease Control and Prevention Bioterrorism website at: www.bt.cdc.gov.

Idaho Response to Anthrax Scare

During the fall of 2001, anthrax spores passed through several mail facilities in the eastern U.S. This intentional release of a bioterrorism agent caused 18 confirmed cases of anthrax and 5 deaths. In response to the unfolding events, fears began rising nationwide concerning items passing through the U.S. Postal Service. Mailed envelopes and packages with suspicious appearance or contents, raised enough concern that some citizens and businesses called police fearing that they may have

been exposed to anthrax. Laboratories across the nation experienced a dramatic increase in powdery samples submitted for *Bacillus anthracis* testing. Physicians began seeing patients present with clinical syndromes compatible with cutaneous and inhalation anthrax.

Idaho was not immune to the effects of this nationwide escalation of fear. Despite being separated geographically from confirmed anthrax exposures in the eastern U. S., Idaho had its share of incidents requiring intervention. Figure 1 depicts response activities in Idaho during the national anthrax scare.

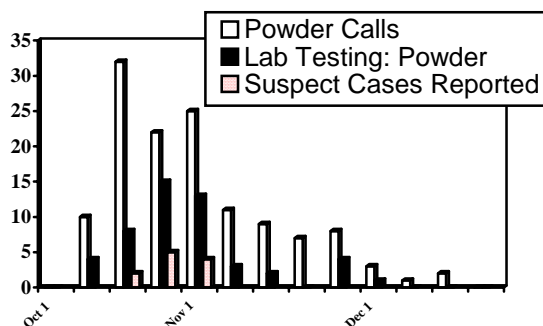


Figure 1: Response to suspected anthrax fears in Idaho between Oct 1, 2001, and Dec 31, 2001, shown by week. The number of incidents reported to State Comm (powder calls), number of calls leading to laboratory testing of a powdery substance (lab testing: powder), and number of suspected clinical cases reported to the Idaho Office of Epidemiology are shown here.

The State Emergency Medical Communications Center (State Comm) received 133 calls concerning suspicious powders from October 12 through December 31. Of the 133 powder calls, 50 (38%) generated items for testing at the Idaho Department of Health and Welfare, Bureau of Laboratories. During this period, items tested by the Bureau of Laboratories included letters, packages, clothing, a hand-held vacuum, and a mailbox. Sample testing is still being requested on occasion. The State Office of Epidemiology was consulted on eleven

suspected anthrax cases (10 inhalation, 1 cutaneous); 7 of which were ill postal workers. All were started on antibiotics for possible anthrax infection, but none ultimately proved to have the disease. Two sets of guidelines for responding to anthrax were produced and distributed to physicians and other health care workers. Valuable lessons were learned during the anthrax experience and are being incorporated into planning for future incidents should they occur.

For after hours public health emergencies call the State Communications Hotline at (208) 846-7610 or 1-800-632-8000.

Joanna Buffington, MD, Medical Epidemiologist, Division of Viral Hepatitis and Rickettsial Diseases with the Centers for Disease Control and Prevention (CDC), will be presenting "**Perinatal Transmission of Hepatitis C and Hepatitis B Virus Infection**" at the Idaho Perinatal Project Winter Conference on February 12, 2002 from 1:30-2:30 and 2:45-3:45 at the Boise State University Student Union Building. For more information contact the Idaho Perinatal Project at (208) 342-7642.

Idaho Disease Bulletin

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